SEQUENCE LISTING

<110>   Hagen, Gustav
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        Weichel, Walter
        Wick, Maresa
        Zubov, Dmitry

<120>   Human Catalytic Telomerase Sub-Unit and its Diagnostic and
Therapeutic Use

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Val Ala Arg Val Leu Gln Arg Leu Cys Glu Arg Gly Ala Lys Asn Val
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Glu Ala Phe Thr Thr Ser Val Arg Ser Tyr Leu Pro Asn Thr Val Thr
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Asp Ala Leu Arg Gly Ser Gly Ala Trp Gly Leu Leu Leu Arg Arg Val
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Pro Arg Arg Arg Leu Gly Cys Glu Arg Ala Trp Asn His Ser Val Arg
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Gly Gly Ser Ala Ser Arg Ser Leu Pro Leu Pro Lys Arg Pro Arg Arg
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Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro
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Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser
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Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln
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Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His
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Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe
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Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg
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Glu Leu Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr Asp Thr Ile
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Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln
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Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu
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          Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala Ala Asn
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11

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12

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agcgcgggga cccggcggct ttccgcgcgc tggtggccca gtgcctggtg tgcgtgccct  240

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13

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gccgccagca ccacgcgggc cccccatcca catcgcggcc accacgtccc tgggacacgc    1020

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14

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15

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<212> DNA
<213> Human

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<223> Nucleotides 2184 to 2219 of SEQ ID NO. 1 have been deleted to pro
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16

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17

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18

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cccgcctgcc ccagcgctac tggcaaatgc ggcccctgtt tctggagctg cttgggaacc      1260

acgcgcagtg cccctacggg gtgctcctca agacgcactg cccgctgcga gctgcggtca      1320

ccccagcagc cggtgtctgt gcccgggaga agccccaggg ctctgtggcg gcccccgagg      1380

aggaggacac agacccccgt cgcctggtgc agctgctccg ccagcacagc agcccctggc      1440

aggtgtacgg cttcgtgcgg gcctgcctgc gccggctggt gccccaggc ctctggggct       1500

ccaggcacaa cgaacgccgc ttcctcagga acaccaagaa gttcatctcc ctggggaagc      1560

atgccaagct ctcgctgcag gagctgacgt ggaagatgag cgtgcgggac tgcgcttggc      1620

tgcgcaggag cccagggggtt ggctgtgttc cggccgcaga gcaccgtctg cgtgaggaga      1680
```

19

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tcctggccaa gttcctgcac tggctgatga gtgtgtacgt cgtcgagctg ctcaggtctt   1740

tcttttatgt cacggagacc acgtttcaaa agaacaggct ctttttctac cggaagagtg   1800

tctggagcaa gttgcaaagc attggaatca gacagcactt gaagagggtg cagctgcggg   1860

agctgtcgga agcagaggtc aggcagcatc gggaagccag gcccgccctg ctgacgtcca   1920

gactccgctt catccccaag cctgacgggc tgcggccgat tgtgaacatg gactacgtcg   1980

tgggagccag aacgttccgc agagaaaaga gggccgagcg tctcacctcg agggtgaagg   2040

cactgttcag cgtgctcaac tacgagcggg cgcggcgccc cggcctcctg ggcgcctctg   2100

tgctgggcct ggacgatatc cacagggcct ggcgcacctt cgtgctgcgt gtgcgggccc   2160

aggacccgcc gcctgagctg tacatccccc aggacaggct cacggaggtc atcgccagca   2220

tcatcaaacc ccagaacacg tactgcgtgc gtcggtatgc cgtggtccag aaggccgccc   2280

atgggcacgt ccgcaaggcc ttcaagaggc aagtcctacg tccagtgcca ggggatcccg   2340

cagggctcca tcctctccac gctgctctgc agcctgtgct acggcgacat ggagaacaag   2400

ctgtttgcgg ggattcggcg ggacgggctg ctcctgcgtt tggtggatga tttcttgttg   2460

gtgacacctc acctcaccca cgcgaaaacc ttcctcagga ccctggtccg aggtgtccct   2520

gagtatggct gcgtggtgaa cttgcggaag acagtggtga acttccctgt agaagacgag   2580

gccctgggtg gcacggcttt tgttcagatg ccggcccacg gcctattccc ctggtgcggc   2640

ctgctgctgg atacccggac cctggaggtg cagagcgact actccagcta tgcccggacc   2700

tccatcagag ccagtctcac cttcaaccgc ggcttcaagg ctgggaggaa catgcgtcgc   2760

aaactctttg gggtcttgcg gctgaagtgt cacagcctgt ttctggattt gcaggtgaac   2820

agcctccaga cggtgtgcac caacatctac aagatcctcc tgctgcaggc gtacaggttt   2880

cacgcatgtg tgctgcagct cccatttcat cagcaagttt ggaagaaccc cacatttttc   2940

ctgcgcgtca tctctgacac ggcctccctc tgctactcca tcctgaaagc caagaacgca   3000

gggatgtcgc tgggggccaa gggcgccgcc ggccctctgc cctccgaggc cgtgcagtgg   3060

ctgtgccacc aagcattcct gctcaagctg actcgacacc gtgtcaccta cgtgccactc   3120

ctggggtcac tcaggacagc ccagacgcag ctgagtcgga agctcccggg gacgacgctg   3180

actgccctgg aggccgcagc caacccggca ctgccctcag acttcaagac catcctggac   3240

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ctctacgtcc cagggaggga ggggcggccc acacccaggc ccgcaccgct gggagtctga   3360

ggcctgagtg agtgtttggc cgaggcctgc atgtccggct gaaggctgag tgtccggctg   3420
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20

```
aggcctgagc gagtgtccag ccaagggctg agtgtccagc acacctgccg tcttcacttc    3480

cccacaggct ggcgctcggc tccaccccag ggccagcttt tcctcaccag gagcccggct    3540

tccactcccc acataggaat agtccatccc cagattcgcc attgttcacc cctcgccctg    3600

ccctcctttg ccttccaccc ccaccatcca ggtggagacc ctgagaagga ccctgggagc    3660

tctgggaatt tggagtgacc aaaggtgtgc cctgtacaca ggcgaggacc ctgcacctgg    3720

atggggggtcc ctgtgggtca aattggggggg aggtgctgtg ggagtaaaat actgaatata   3780

tgagtttttc agttttgaaa aaaaaaaaaa aaaaaaaaaa aaaa                3824
```

<210> 11
<211> 3411 *ok*
<212> DNA
<213> Human

<220>
<221> CDS
<222> (1)..(3411)
<223> Nucleotides 1-59 and 3471-4042 of SEQ ID NO 1 were deleted to pro
     vide this sequence.

<400> 11
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gcgatgccgc gcgctccccg ctgccgagcc gtgcgctccc tgctgcgcag ccactaccgc     60

gaggtgctgc cgctggccac gttcgtgcgg cgcctggggc cccagggctg gcggctggtg    120

cagcgcgggg acccggcggc tttccgcgcg ctggtggccc agtgcctggt gtgcgtgccc    180

tgggacgcac ggccgccccc cgccgccccc tccttccgcc aggtgtcctg cctgaaggag    240

ctggtggccc gagtgctgca gaggctgtgc gagcgcggcg cgaagaacgt gctggccttc    300

ggcttcgcgc tgctggacgg ggcccgcggg gcccccccg aggccttcac caccagcgtg     360

cgcagctacc tgcccaacac ggtgaccgac gcactgcggg ggagcggggc gtggggggctg   420

ctgctgcgcc gcgtgggcga cgacgtgctg gttcacctgc tggcacgctg cgcgctcttt    480

gtgctggtgg ctcccagctg cgcctaccag gtgtgcgggc cgccgctgta ccagctcggc    540

gctgccactc aggcccggcc cccgccacac gctagtggac cccgaaggcg tctgggatgc    600

gaacgggcct ggaaccatag cgtcagggag gccggggtcc ccctgggcct gccagccccg    660

ggtgcgagga ggcgcggggg cagtgccagc cgaagtctgc cgttgcccaa gaggcccagg    720

cgtggcgctg cccctgagcc ggagcggacg cccgttgggc aggggtcctg ggcccacccg    780

ggcaggacgc gtggaccgag tgaccgtggt ttctgtgtgg tgtcacctgc cagacccgcc    840
```

21

```
gaagaagcca cctctttgga gggtgcgctc tctggcacgc gccactccca cccatccgtg    900

ggccgccagc accacgcggg ccccccatcc acatcgcggc caccacgtcc ctgggacacg    960

ccttgtcccc cggtgtacgc cgagaccaag cacttcctct actcctcagg cgacaaggag   1020

cagctgcggc cctccttcct actcagctct ctgaggccca gcctgactgg cgctcggagg   1080

ctcgtggaga ccatctttct gggttccagg ccctggatgc cagggactcc ccgcaggttg   1140

ccccgcctgc cccagcgcta ctggcaaatg cggcccctgt ttctggagct gcttgggaac   1200

cacgcgcagt gccctacgg ggtgctcctc aagacgcact gcccgctgcg agctgcggtc   1260

accccagcag ccggtgtctg tgcccgggag aagccccagg gctctgtggc ggcccccgag   1320

gaggaggaca cagacccccg tcgcctggtg cagctgctcc gccagcacag cagcccctgg   1380

caggtgtacg gcttcgtgcg ggcctgcctg cgccggctgg tgcccccagg cctctggggc   1440

tccaggcaca acgaacgccg cttcctcagg aacaccaaga agttcatctc cctggggaag   1500

catgccaagc tctcgctgca ggagctgacg tggaagatga gcgtgcggga ctgcgcttgg   1560


ctgcgcagga gcccaggggt tggctgtgtt ccggccgcag agcaccgtct gcgtgaggag   1620

atcctggcca agttcctgca ctggctgatg agtgtgtacg tcgtcgagct gctcaggtct   1680

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gagctgtcgg aagcagaggt caggcagcat cgggaagcca ggcccgccct gctgacgtcc   1860

agactccgct tcatccccaa gcctgacggg ctgcggccga ttgtgaacat ggactacgtc   1920

gtgggagcca gaacgttccg cagagaaaag agggccgagc gtctcacctc gagggtgaag   1980

gcactgttca gcgtgctcaa ctacgagcgg gcgcggcgcc ccggcctcct gggcgcctct   2040

gtgctgggcc tggacgatat ccacagggcc tggcgcacct tcgtgctgcg tgtgcgggcc   2100

caggacccgc cgcctgagct gtactttgtc aaggtggatg tgacgggcgc gtacgacacc   2160

atcccccagg acaggctcac ggaggtcatc gccagcatca tcaaacccca gaacacgtac   2220

tgcgtgcgtc ggtatgccgt ggtccagaag gccgcccatg ggcacgtccg caaggccttc   2280

aagagccacg tctctacctt gacagacctc cagccgtaca tgcgacagtt cgtggctcac   2340

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gaggccagca gtggcctctt cgacgtcttc ctacgcttca tgtgccacca cgccgtgcgc   2460

atcaggggca gtcctacgt ccagtgccag gggatcccgc agggctccat cctctccacg   2520
```

22

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ctgctctgca gcctgtgcta cggcgacatg gagaacaagc tgtttgcggg gattcggcgg    2580

gacgggctgc tcctgcgttt ggtggatgat ttcttgttgg tgacacctca cctcacccac    2640

gcgaaaacct tcctcaggac cctggtccga ggtgtccctg agtatggctg cgtggtgaac    2700

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aacatctaca agatcctcct gctgcaggcg tacaggtttc acgcatgtgt gctgcagctc    3060

ccatttcatc agcaagtttg gaagaacccc acattttttcc tgcgcgtcat ctctgacacg    3120

gcctccctct gctactccat cctgaaagcc aagaacgcag ggatgtcgct gggggccaag    3180

ggcgccgccg gccctctgcc ctccgaggcc gtgcagtggc tgtgccacca agcattcctg    3240

ctcaagctga ctcgacaccg tgtcacctac gtgccactcc tggggtcact caggacagcc    3300

cagacgcagc tgagtcggaa gctcccgggg acgacgctga ctgccctgga ggccgcagcc    3360

aacccggcac tgccctcaga cttcaagacc atcctggact gatggccacc c    3411
```

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<210> 12
<211> 4012
<212> DNA
<213> Homo sapien

<220>
<221> CDS
<222> (1)..(4042)
<223> Nucleotide positions 1-1782 and 3872 to 4042 are identical to the
      same sequences in SEQ ID NO: 1; nucleotide positions from 1783 t
      o 3871 are according to SEQ ID NO: 7.

<400> 12

gtttcaggca gcgctgcgtc ctgctgcgca cgtgggaagc cctggccccg gccacccccg    60

cgatgccgcg cgctccccgc tgccgagccg tgcgctccct gctgcgcagc cactaccgcg    120

aggtgctgcc gctggccacg ttcgtgcggc gcctggggcc ccagggctgg cggctggtgc    180

agcgcgggga cccggcggct ttccgcgcgc tggtggccca gtgcctggtg tgcgtgccct    240
```

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gggacgcacg gccgcccccc gccgcccct ccttccgcca ggtgtcctgc ctgaaggagc      300

tggtggcccg agtgctgcag aggctgtgcg agcgcggcgc gaagaacgtg ctggccttcg      360

gcttcgcgct gctggacggg gcccgcgggg gcccccccga ggccttcacc accagcgtgc      420

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tgctggtggc tcccagctgc gcctaccagg tgtgcgggcc gccgctgtac cagctcggcg      600

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aacgggcctg gaaccatagc gtcagggagg ccggggtccc cctgggcctg ccagccccgg      720

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gtggcgctgc ccctgagccg gagcggacgc ccgttgggca ggggtcctgg gcccacccgg      840

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aagaagccac ctctttggag ggtgcgctct ctggcacgcg ccactcccac ccatccgtgg      960

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tctggagcaa gttgcaaagc attggaatca gacagcactt gaagagggtg cagctgcggg     1860

agctgtcgga agcagaggtc aggcagcatc gggaagccag gcccgccctg ctgacgtcca     1920
```

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tgggagccag aacgttccgc agagaaaaga gggccgagcg tctcacctcg agggtgaagg    2040

cactgttcag cgtgctcaac tacgagcggg cgcggcgccc cggcctcctg ggcgcctctg    2100

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tcccccagga caggctcacg gaggtcatcg ccagcatcat caaaccccag aacacgtact    2280

gcgtgcgtcg gtatgccgtg gtccagaagg ccgcccatgg gcacgtccgc aaggccttca    2340

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25

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ctgggagctc tgggaatttg gagtgaccaa aggtgtgccc tgtacacagg cgaggaccct    3900

gcacctggat gggggtccct gtgggtcaaa ttggggggag gtgctgtggg agtaaaatac    3960

tgaatatatg agttttttcag ttttgaaaaa aaaaaaaaaa aaaaaaaaaa aa           4012
```

G1